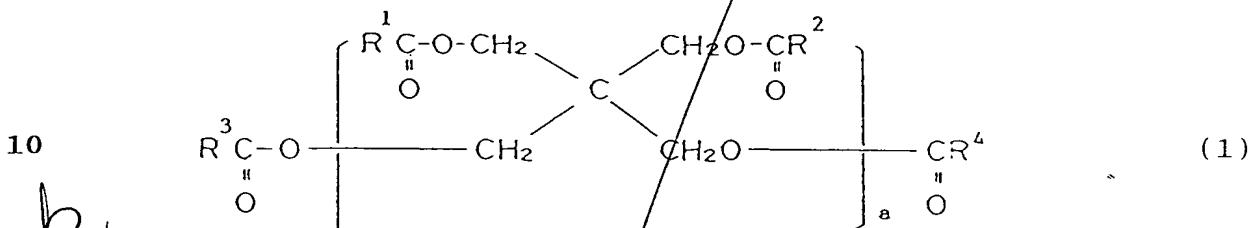


What is claimed is:

1. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists of ^{as a base oil}

5 a pentaerythritol ester of formula (1)



Sub B1
Sub B2

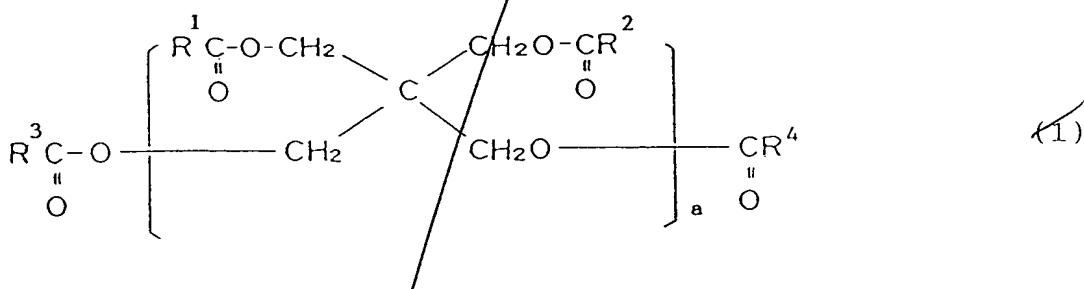
15 wherein R¹-R⁴ are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3; and

20 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of ~~phenylglycidyl ether~~ epoxy compounds, ~~alkylphenylglycidyl ether~~ epoxy compounds, ~~alkylglycidyl ether~~ epoxy compounds, ~~glycidyl ester~~ epoxy compounds, ~~aryloxirane~~ compounds, ~~alkyloxirane~~ compounds, ~~alicyclic~~ epoxy compounds and ~~epoxidized fatty acid~~ monoesters.

No Kinematic Viscosity

2. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists of:

5 a pentaerythritol ester of formula (1)



wherein R^1 - R^4 are identical with or different from each other and are each a member selected from the group 15 consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3;

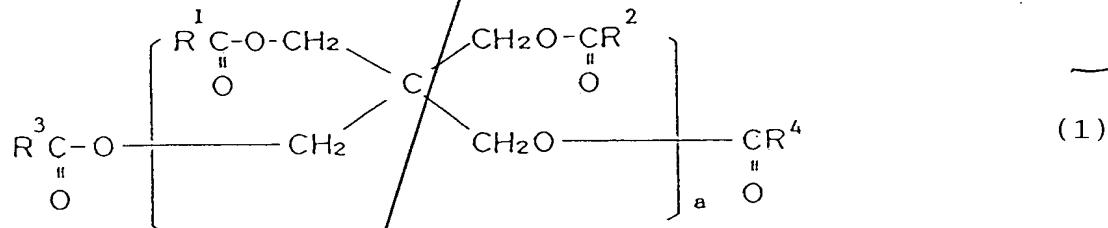
at least one conventional oil selected from the group 20 consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes; and

0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy 25 compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds,

alicyclic epoxy compounds and epoxidized fatty acid monoesters.

3. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant 5 and a refrigerator oil, and said refrigerator oil consists of:

a pentaerythritol ester of formula (1)



15 wherein R^1 - R^4 are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms 20 and a is an integer of 1 to 3;

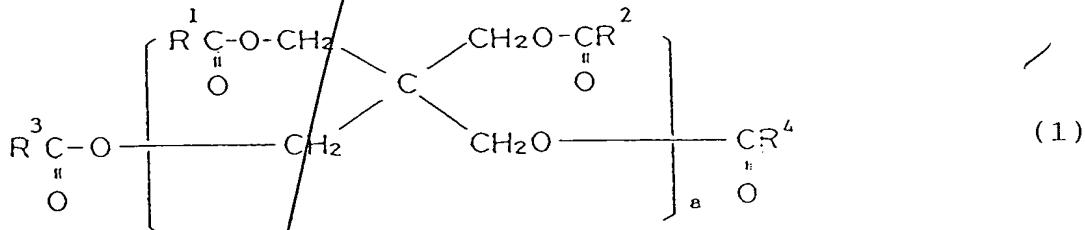
0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, 25 alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds,

alicyclic epoxy compounds and epoxidized fatty acid monoesters; and

5 at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, ~~antifoaming~~ ^{antifoaming} ~~antiforming~~ agents and metal inactivators.

10 A 4. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists of:

15 Sub B 17 a pentaerythritol ester of formula (1)



20 wherein R¹-R⁴ are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3;

25 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy

compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid

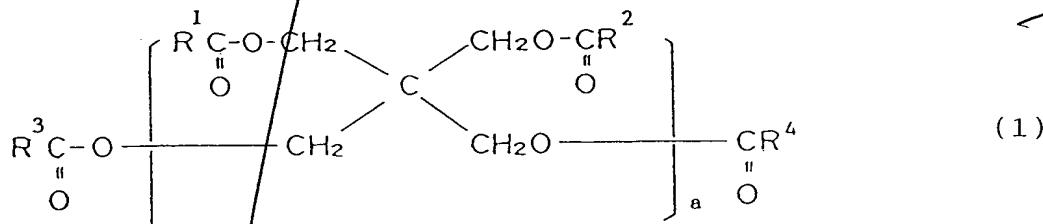
5 monoesters; and

at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters.

10 5. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists of:

a pentaerythritol ester of formula (1)

15



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wherein R¹-R⁴ are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3;

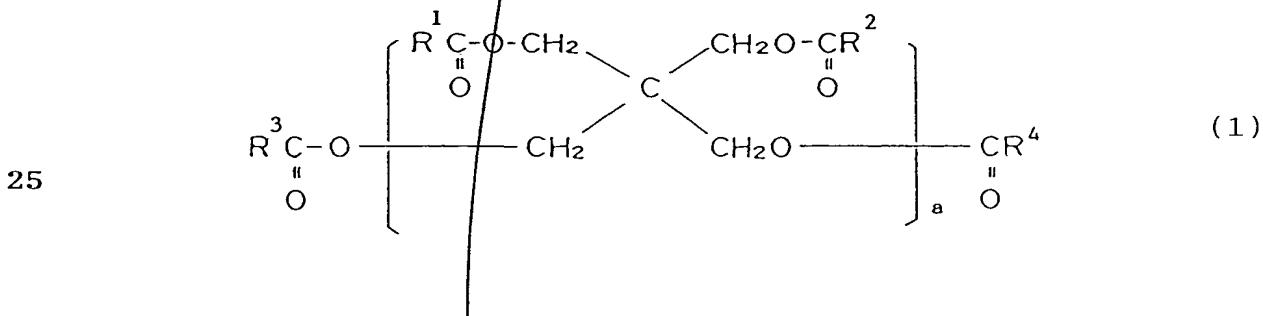
at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes;

0.1-5% by weight based on the total amount of said 5 refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid 10 monoesters; and

at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear 15 resistant additives, extreme pressure agents, oiliness *antifoaming* improvers, *antiforming* agents and metal inactivators.

6. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists of:

20 a pentaerythritol ester of formula (1)



wherein R^1-R^4 are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3;

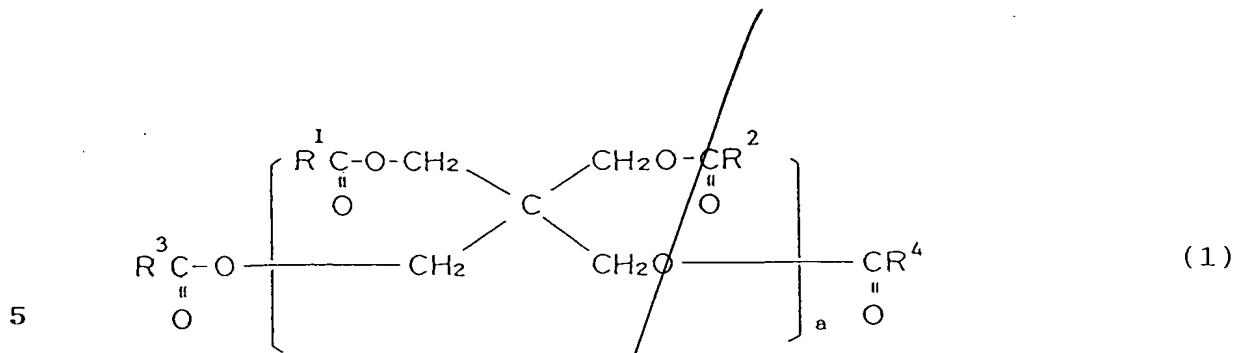
at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes;

10 0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters; and

at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters.

7. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant and a refrigerator oil, and said refrigerator oil consists 25 of:

a pentaerythritol ester of formula (1)



Sub
B17

wherein R^1-R^4 are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms and a is an integer of 1 to 3;

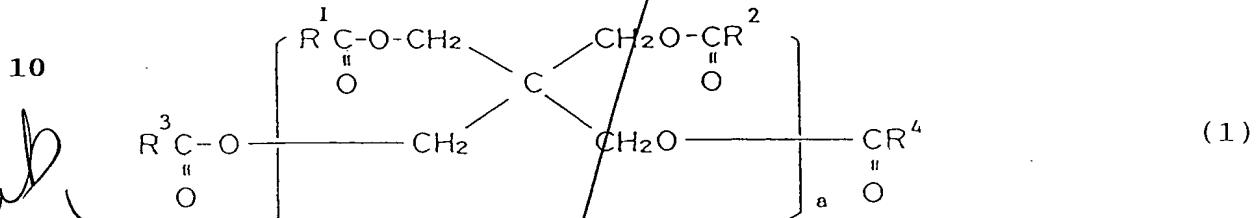
0.1-5% by weight based on the total amount of said refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds, alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters;

at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters; and at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear

A resistant additives, extreme pressure agents, oiliness improvers, antifoaming agents and metal inactivators.

8. A fluid composition for use in refrigerators, which consists of a chlorine-free fluorocarbon refrigerant 5 and a refrigerator oil, and said refrigerator oil consists of:

a pentaerythritol ester of formula (1)



15 wherein R¹-R⁴ are identical with or different from each other and are each a member selected from the group consisting of straight-chain alkyl groups having 3 to 11 carbon atoms, branched-chain alkyl groups having 3 to 15 carbon atoms and cycloalkyl groups having 6-12 carbon atoms 20 and a is an integer of 1 to 3;

at least one conventional oil selected from the group consisting of paraffinic mineral oils, naphthenic mineral oils, poly α -olefins and alkylbenzenes;

0.1-5% by weight based on the total amount of said 25 refrigerator oil of at least one epoxy compound selected from the group consisting of phenylglycidyl ether epoxy compounds, alkylphenylglycidyl ether epoxy compounds,

alkylglycidyl ether epoxy compounds, glycidyl ester epoxy compounds, aryloxirane compounds, alkyloxirane compounds, alicyclic epoxy compounds and epoxidized fatty acid monoesters;

5 at least one phosphorus compound selected from the group consisting of phosphoric esters, acid phosphoric esters, amine salts of acid phosphoric esters, chlorinated phosphoric esters, and phosphorous esters; and

10 at least one additive selected from the group consisting of phenol antioxidants, amine antioxidants, wear resistant additives, extreme pressure agents, oiliness improvers, ~~antiforming~~ ^{antifoaming} agents and metal inactivators.

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